Franklin County Adult Basic Education
MSAD #9 Adult & Community Education

Curriculum Project
Everyday Math Level Two

Curriculum Academy
June 2004

.

Curriculum Team
Ray Therrien
Sharron Cornell
Sue Fahn
Connie Johnson
Maggie Scholl

108 Fairbanks Road, Farmington, ME 04938 (207) 778-3460 Fax (207) 778-2971

Introduction

Herein lies a framework for a curriculum entitled Everyday Math Level Two. We envision that Level One would cover whole number operations and the knowledge and skills taught in the first course would be prerequisite to Part
Two.

We believe in using authentic materials to help learners make the connections between math taught in the classroom and the math that adults need to know and be able to use in everyday life.
We have included some sample lesson plans for each unit; however, this is not meant to be a complete program. It is merely a framework that outlines the knowledge and skills that should be taught in this course and the expected outcomes. It will also provide teachers with some tools and resources to use when developing their lessons. Our belief in the use of authentic materials is reflected in the lesson plans presented. Traditional workbook pages are used as follow up activities. Teachers can use these exemplars as a starting point to create their own additional lesson plans.

We chose to focus on NRS Levels 3 and 4 because we have found that many of our learners enter our program at those levels and that fractions, decimals and percents are areas of weakness. We have also included graphs as a unit of study because many of our pre-GED. Students have had little experience with them and find it difficult to interpret their meaning.

It can be an enjoyable experience to let the creative juices flow and come up with ways to use authentic materials to introduce concepts to students. More importantly, it is a great way to show students the connection between math and its use in everyday life. We hope that you and your students can profit from these ideas.

Everyday Math Level Two

Table of Contents

Everyday Math LevelTwo

Content Area –Math

Course Outline

Pre-assessment confirming prior knowledge of whole number operations
Fractions
Decimals
Percents
Graphs

Course Outcomes

1. Ability to analyze real-life math problems and determine an appropriate method to solve them.

2. Ability to demonstrate the skills used in mathematical operations to solve problems in real-life situations.

3. Ability to construct a graph to represent numerical relationships determined through calculations.

EFF Standard

Decision making skills: Use math to solve problems and communicate.

Prior Assessments

Multiple Intelligences Survey
Class discussions to elicit prior knowledge
Fractions Inventory
Decimals Inventory
Percent Inventory

Unit One -Fractions

NRS Level:	3 or 4
Maine Learning Results:	A. Numbers and Sense
Theme/Topic	Fractions
Essential Question:	How do we use fractions in our everyday lives?
Outcomes:	Demonstrate understanding of fractions Demonstrate a number sense in relation to fractions Demonstrate ability to calculate fractions Demonstrate the application of fractions in real-life problems
Knowledge & Skills:	Understanding the meaning of fractions Reducing fractions Raising fractions to higher term Changing improper fractions to whole or mixed numbers Adding Fractions Finding Common Denominators Subtracting fractions Multiplying fractions Dividing Fractions Estimating with fractions
Tools and Resources:	Number Power 2 Hershey's Fractions Book The Only Math Book You'll Ever Need Recipes Word Problems (teacher-made or from text) Fractions Workbook (see last page): "Authentic Materials"

Prior Assessment:	Multiple Intelligences Survey Whole Number Inventory Fractions Inventory TABE
Ongoing Assessment:	Teacher observations Conversations with Students Student journals Student products
Final Assessment:	Portfolio

.

Lesson Plan Title: Introduction to Fractions

Outcomes: Demonstrate a number sense in relation to fractions.

Learning Objectives:

1. Student will be able to define the terms fraction and mixed number.
2. Students will be able to explain what a fraction is.
3. Students will demonstrate the ability to reduce fractions using manipulatives.
4. Students will demonstrate the ability to raise fractions to a higher term using manipulatives.
5. Students will demonstrate simple addition and subtraction of fractions with the same denominator using manipulatives.

Learning Activities:

1. Ask Students to give an example of a fraction. What does the top number represent? What does the bottom number represent?
2. Read the Hershey's Book
3. Using candy bar, demonstrate fractions 1/12, 2/12, 3/12 etc. and addition/subtraction with same denominator. Using yardstick, demonstrate fractions 1/36, 2/36 etc. and addition/subtraction with same denominator. Using change and dollar, demonstrate fractions 1/100,2/100, 50/100 etc. and addition/subtraction with the same denominator.
4. Using manipulatives demonstrate reducing fractions.
5. Using, manipulatives, demonstrate raising a fraction to higher terms.
6. Have students pair up and do worksheets with specific pictorial and written problems. Teacher observes and converses as part of ongoing assessment.

Tools/Resources:	The Hershey's Milk Chocolate Fractions Book Hershey Bars Rulers and yardsticks Assorted Change (pennies, nickels, dimes, quarters, half dollars, dollars) Handiwipes
Assessment:	Teacher will elicit prior knowledge through introductory discussion with students. Ongoing assessment will be done through observation of student pairs and discussion with students.
Closure:	Guide students through objectives one more time by soliciting responses to questions. Have students record an entry in their math journals about what they learned in today's lesson and how they might use the knowledge in their lives.
Follow-up Activity:	At home, think of five examples of fractions from your life and be ready to explain their meaning at the next class.
Next Topics:	Changing improper fractions to whole or mixed numbers

.

Unit Two- Decimals

NRS Level:	3 or 4
Maine Learning Results:	A. Numbers And Numbers Sense
Theme/Topic:	Decimals
Essential Question:	How do we use decimals in our everyday lives?
Outcomes:	Demonstrate understanding of decimals Demonstrate a number sense in relation to fractions Demonstrate ability to calculate decimals Demonstrate the application of decimals in real-life problems
Knowledge & Skills:	Understanding the meaning of decimals Reading decimals Writing decimals Changing decimals to fractions Changing fractions to decimals Comparing decimals Adding decimals Subtracting decimals Multiplying decimals Dividing decimals
Tools & Resources:	Number Power 2 Teacher-made word problems "Authentic" materials Fx-260 calculator

Prior Assessment:	Multiple Intelligences Survey Whole Number Inventory Decimal Inventory TABE
Ongoing Assessment:	Teacher observations Conversations with students Student journals Student products
Final Assessment:	Portfolio

.

Lesson Plan Title: Introduction to Decimals

Outcomes: Demonstrate a number sense in relation to decimals.

Learning Objectives:

1. Student will demonstrate knowledge of the place value system as it relates to decimals.
2. Student will demonstrate the ability to read a decimal.
3. Student will demonstrate the ability to write a decimal.

Learning Activities:

1. Using money, demonstrate for students the meaning of decimals -whole numbers, tenths, and hundredths place.
2. Have students work in pairs. Have the students take turns placing an amount of money on the table while the other student writes the whole number and decimal that correctly represents the money and labeling each place with the correct term. Circulate and observe student progress.
3. Introduce the rest of the decimal places, relating their names to the names of the whole number places.
4. Have student pairs write decimals for each other and identify the places. Circulate and observe.
5. Using money again, have students place any amount under a dollar on the table in front of them. Have them write the number that would represent that amount of change. Ask them how they would say the amount. Connect what they answer with the way a decimal is read. (You read the number as if it were a whole number and then give it the decimal name according to the name of the place furthest to the right. (point out that cents stands for hundredths place.) Students

	should practice until they feel confident. Circulate, observe and discuss. 6. Have the students make an entry in their journals explaining what they learned today.
Tools & Resources:	An assortment of money, both paper and coins (This could be real or play money) Number Power 2
Assessment:	Teacher will elicit prior knowledge through introductory discussion with students. Ongoing assessment will be done through observation of student pairs and discussion with students.
Closure:	Guide students through objectives one more time by soliciting answers to questions. Have students record an entry in their math journals about what they learned today and how they might use the knowledge in their lives.
Follow-up Activity:	For homework do pages 62-64 in Number Power 2.
Next Topics:	Writing decimals and getting rid of unnecessary zeroes.

.

Unit Three –Percents

NRS Level:	3 or 4
Maine Learning Results:	A. Numbers and Number Sense
Theme/Topic:	Percents
Essential Question:	How do we use percents in our every day lives?
Outcomes:	Demonstrate understanding of percents. Demonstrate a number sense in relation to percents. Demonstrate the ability to calculate with percents. Demonstrate the application of percents in real-life problems.
Knowledge & Skills:	Understanding the meaning of percents Changing decimals to percents Changing percents to decimals Changing fractions to percents Changing percents to fractions Finding the percent of a number Finding what percent one number is of another Finding percent of change Finding a number when a percent of it is given
Tools & Resources:	Number Power 2 " Authentic Materials"
Prior Assessment:	Multiple Intelligences Survey Whole Number Inventory Percent Inventory TABE

Ongoing Assessment:	Teacher Observations Conversations with students Student journals Student products
Final Assessment:	Portfolio

Lesson Plan Title: Introduction to Percents

Outcomes: Demonstrate a number sense in relation to Percents.

Learning Objectives:
1. Students will be able to express decimals as a fraction with a denominator of 100.
2. Students will be able to express any fraction with a denominator of 100 as a decimal.
3. Students will be able to change a decimal to a percent.
4. Students will demonstrate an understanding of the relationship between fractions, decimals and percents.

Learning Activities:
1. Ask students to think of a common thing that is divided into 100. ($) Show how percent is also based on 100.
2. Ask students how can you express the following numbers as fractions and percents: .25, .50, and .75.
3. Ask students what percent of a pie is represented by 8/8. In other words, what is meant by 100%?
4. Continue to have students express percents by dividing anything manipulative (blocks, M&M's candy etc.) into 100 parts, then counting out a certain number and expressing it as a percent, a decimal, and a fraction. Circulate around class observing and discussing with students.
5. Demonstrate for students how a decimal is changed to a percent by moving the decimal two places and adding the percent sign. Have students perform several of these changes.
6. Have students write an entry in their math journals about what they learned today.

Tools & Resources: Number Power 2
"Authentic Materials"

Assessment:	Teacher will assess prior knowledge through introductory discussion with students. Ongoing assessment will be done through teacher observation and discussion with students.
Closure:	Guide students through objectives once more by soliciting responses to questions. Have students record an entry in their math journals about what they learned in today's lesson and how it might relate to their everyday lives.
Follow-up Activity:	At home think of two times you have seen percents in your everyday life. Do the exercises on pages 98 and 99 in Number Power 2.
Next Topic:	Finding the percent of a number

.

Unit Four- Graphs

NRS Level:	3 or 4
Maine Learning Results:	A. Numbers and Number Sense
Theme/Topic:	Graphs
Essential Question:	How do we use graphs in our every day lives?
Outcomes:	Demonstrate an understanding of the four types of graphs. Demonstrate the ability to represent data in each kind of graph. Demonstrate the ability to interpret a graph.
Knowledge & Skills:	Ability to interpret data presented in a circle graph Ability to create circle graphs to represent data Ability to interpret data presented in a bar graph Ability to create bar graphs to represent data Ability to interpret data presented in line graphs Ability to create a line graph to represent data Ability to interpret data represented in a Pictograph Ability to create a pictograph to represent data
Tools & Resources:	Essential Mathematics for Life, Percents, Graphs, and Measurements. Scott Foresman 3rd Edition Newspapers and magazines Computer Lab Web site: www.fodoweb.con/erfora/readtext.asn?

Prior Assessments:	Multiple Intelligences Whole Number Inventory TABE
Ongoing Assessment:	Teacher Observations Conversations with Students Student journals Student products
Final Assessment:	Portfolio

.

Lesson Plan Title: Introduction to Circle Graphs

Outcomes:	Demonstrate an understanding of circle graphs.
Learning Objectives:	1. Student will demonstrate the ability to translate the information presented in a circle graph. 2. Student will demonstrate the ability to represent data in the form of a circle graph.
Learning activities:	1. Students will take part in an assessment of prior knowledge. 2. Students will collect data for their circle graph by completing the survey on how they spend their day. 3. Students will draw a circle using a compass. 4. Students will divide circle into segments appropriate to the information determined in their survey. 5. Students will title and label their circle graphs. 6. Students will write a paragraph about what they by examining the way they spend their day.
Tools& Resources:	Essential Mathematics for Life, Percents, Graphs, And Measurements. Scott Foresman, 3rd Edition Compass Teacher generated survey with questions on how people spend their days
Assessment:	Teacher will elicit prior knowledge of graphs through discussion with students. Ongoing assessment will be through teacher observation and examination of graphs constructed and paragraphs written.
Closure:	Students will share their graphs with each other and comment on what they learned from analyzing their time in this way.

Follow-up Activities: Worksheet-Lesson 31 in textbook
Constructing graphs on computer- students will visit the computer lab for a lesson on how to construct a graph on the computer.

Survey: How Do You Spend Your Day?

1. How many hours do you spend in classes?

2. How much time do you spend traveling each day?

3. How much time do you spend doing household chores?

4. How much time do you spend cooking?

5. How much time do you spend sleeping?

6. How much time do you spend on entertainment (like watching TV)?

7. How much time do you spend on homework?

8. What other ways do you spend time during your typical day? List them and the times you spend on each.

Remember you need to account for all 24 hours.

Now, using the skills you learned when studying percents, figure out what percent of your day is spent in each category.

You will use this data to construct your circle graph.
.

References

Bolster, Rob., Pallotta, Jerry. (1999). The Hershey Milk Chocolate Fractions Book. New York: Scholastic Inc.

Howett, Jerry. (2000). Contemporary's Number Power Addition, Subtraction, Multiplication, and Division. Chicago: Contemporary Books.

Howett, Jerry. (2000). Contemporary' s Number Power Fractions, Decimals, and Percents. Chicago: Contemporary Books.

Kogelman, Ph.D., Stanley., Heller, Barbara R. (1986). The Only Math Book You'll Ever Need. New York: Facts On File Publications.

The Mathematics Faculty, Charuhas, Mary S., McLeighan, Valjean., McMurty, Dorothy Davis. (1989). Essential Mathematics for Life Percents. Graphs. and Measurements. (3rd ed.). Illinois: Scott, Foresman and Company.

Shea, James T. (1995). Mathematics Skill Books Decimals and Percents. Austin, Texas: Steck-Vaughn Company.

Shea, James T. (1995). Mathematics Skill Books Whole Numbers. Austin, Texas: Steck-Vaughn Company.

Stenmark, Jean Kerr., Thompson, Virginia., Cossey, Ruth. (1986). Family Math. California: Regents, University of California.

.